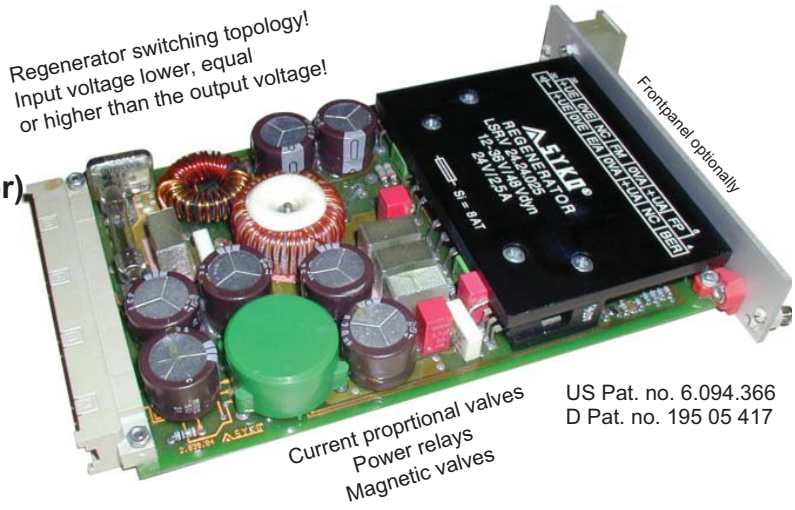
- **Euro card 3U / 5TE (front panel)**
- **Input range 4:1 up to > 10:1**
- **Limited parallel operation**
- **Frontend supply**
- **Security relevant topology**
  (No breakethrough of input to output)
- **Over voltage protection (Thyristor)**
- **Noise suppression EN 55022.B**
- **Reduced inrush current**
- **Output adjustable (0V - $U_{out\ max}$)**
- **Option: low voltage-power-factor**

for Vehicle application / Installation technology / Railway technology



US Pat. no. 6.094.366
D Pat. no. 195 05 417

Series LSR · V

Main points:

Output:

- Accuracy absolute ± 1%
- Regulation $\Sigma(U_{in}+I_{out}+T_U)$ <±1,5%
- Ripple <40 mV_{pp} über T_U
- Spikes <100 mV_{pp} (T 1:1/50MHz)
- Regulation time ΔI=50% ≤ 3 ms
- Current limit < 1,2 $I_{o\ max}$
- Output spike filter (C - L² - C)
- Over voltage protection 1,2 $U_{o\ max}$
- Option BER: adjustable output voltage ($0 \div U_{out\ max}$) = (0 ÷ 5 V)
- Limited parallel operation

Input:

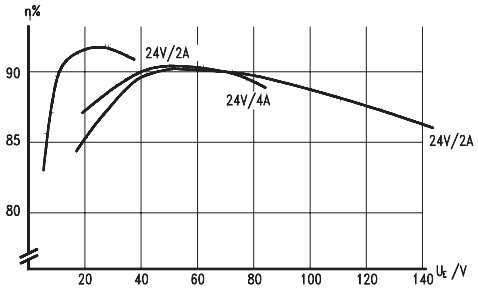
- No-load power approx. 0,4 Watt
- extreme input voltage range
- Input fuse
- Inputs-reverse pol. protection (fuse)
- Input filter EN 55022.B
- ON-OFF-Remote (Inhibit)
- Low inrush current
- Switch-on current limited
- Capable for defined transients

General:

- 15-pol. connector DIN41612 (style H)
- Pin compatible to series LSR.L
- Ambient temperature -25°C / +70°C, Option: -40°C / +85°C
- Derating 1% / °C > 60°C
- Air convection cooled
- Common 0V input - output
- MTBF on request
- Shock/vibration according to EN 50155
- Weight approx. 370 g
- No breakthrough of U_{in} to U_{out}

Uin	Uout	Iout	Model
V	V	A	number
7 - 38	12	4,0	LSR·V 19·12·040
6V dyn	15	3,0	LSR·V 19·15·030
7 - 38	12	3,0	LSR·V 19·12·030
6 - 60V dyn	24	2,0	LSR·V 19·24·020
14,4 - 34	18	4,0	LSR·V 24·18·040
Surge level 3	24	3,0	LSR·V 24·24·030
17 - 45	24	4,0	LSR·V 28·24·040
60V dyn	28	3,0	LSR·V 28·28·030
19 - 80	24	4,0	LSR·V 50·24·040
100V dyn	48	1,8	LSR·V 50·48·018
	60	1,5	LSR·V 50·60·015
16,8 - 158	24	2,0	LSR·V 03·24·020
	48	1,0	LSR·V 03·48·010
	60	0,8	LSR·V 03·60·008
(H)	-40°C up to +85°C		Additional charge
Option BER: adjustable Uout (0-$U_{out\ max}$)			Additional charge
Modification costs for possible changes above values			on request

Efficiency:



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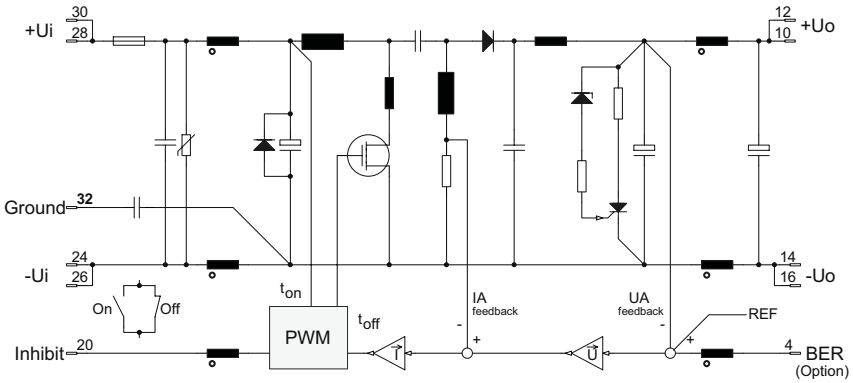
Regenerators of the ***LSR·V*** series regenerate input voltage ranges of 1:4 up to 1:10 to a non-isolated, regulated and short circuit proof output voltage.



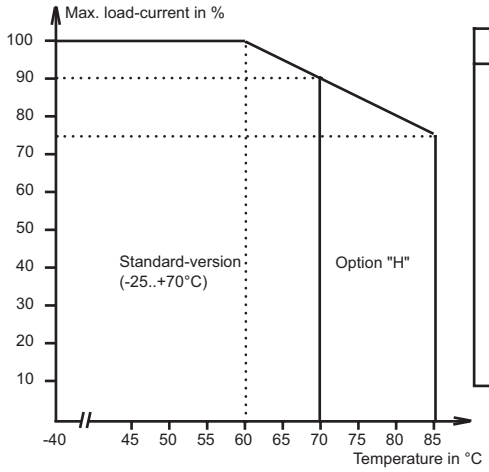
The input voltage can be lower and higher as the regulated output voltage. Under the condition of a current derating >60°C, converters with the same output voltage can operate parallel.

The topology prevents the break through of the input voltage to the output side, especially for extreme security requirements at high input voltages, even in the case of a defect switching transistor (a normal step-down converter does not prevent the break through). Also eliminated are the disadvantages of the step-up topology, which allows the reach-through to the blocking capacitor (high inrush currents) and the not existing short circuit protection.

Just small input filter-capacitors are used to keep the noise suppression according to the EN55022.B. An active over voltage protection prevents an output sided over voltage in the case of a defect control-loop. The output is over load and short circuit protected. Low no-load currents of <18mA or <7mA at Inhibit-remote do not require a separating relay.

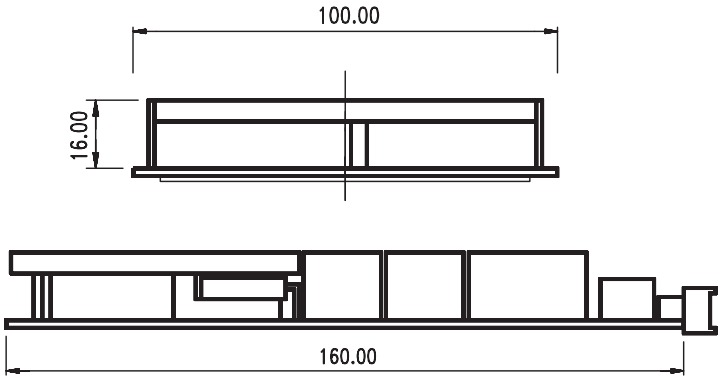
Extreme high efficiencies up to > 92 % and the wide input voltage range allow the use in the way of a house-keeper-function ("comes first / goes last") for high industrial requirements and especially for special technology applications as well as charger or current regulator. A special application allows the Power-Factor-Regulation in low-voltage AC-networks.

Derating-curve

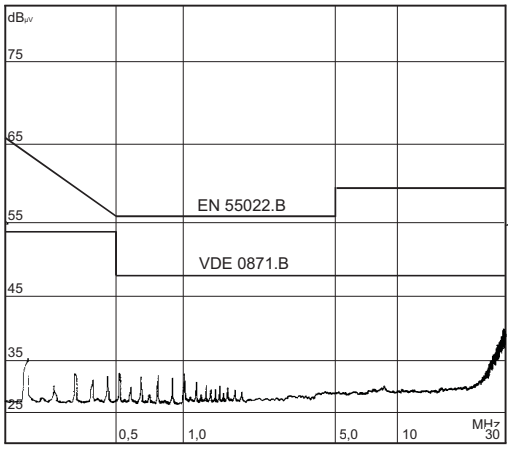


Pin-assignment

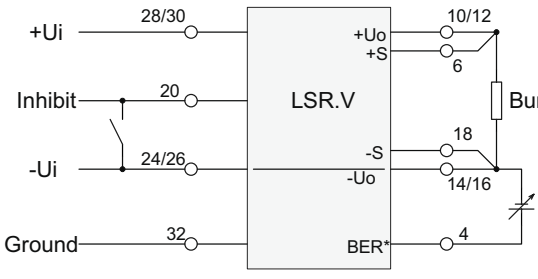
	LSR·V
4	BER
6	+sense
10	+Uo
12	+Uo
14	-Uo
16	-Uo
18	-sense
20	Inhibit
24	-Ui
26	-Ui
28	+Ui
30	+Ui
32	Ground



Measurement radio interference



Application adjustable output voltage (Option BER)



$Uo = Uomax \times \frac{U_{BER}}{5{,}0V}$

* external setpoint setting
0...5 V

Inhibit switch open = converter on
Inhibit switch closed = converter off

* adjustable Uo
(Option BER)